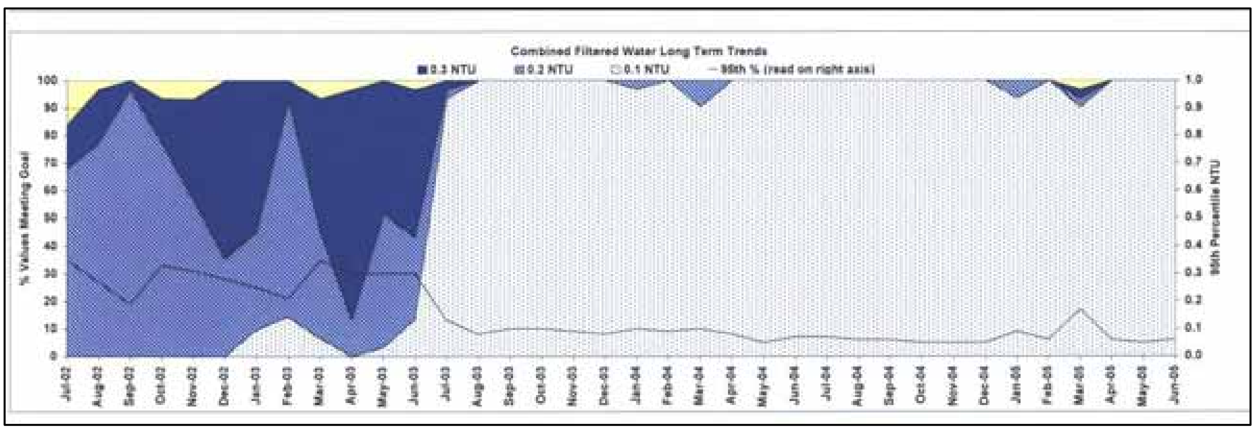
Idaho

Area Wide Optimization Program

(AWOP)



<u>Third Annual Report</u>

July 1, 2006

Idaho Area-Wide Optimization Program Annual Report
Year 3 (July 2005 - June 2006)
July 1, 2006

Executive Summary

This third annual report for the Idaho Area Wide Optimization Program (AWOP) summarizes what has been done to sustain and enhance the program in Idaho since the last annual report, and documents the status and progress of all 17 coagulation plants operating in the state. It should be noted that there is a 12 month “lag time” between data collection/analyses and annual report. This report, covering July 2005 through June 2006, reviews and analyzes plant turbidity data for July 2004 through June 2005.

Much of the third AWOP year has involved Performance Based Training and Comprehensive Performance Evaluations. These are both targeted performance improvement tools that are designed to assist with success in optimization and water quality improvement at water treatment plants. The Idaho AWOP Performance Based Training program that started in 2004 is now complete except for a final follow-up session scheduled for this winter. Idaho hosted a Comprehensive Performance Evaluation that will enable one Idaho plant to exercise many improvements in their surface water treatment. In addition, this on-site exercise served as a training tool for environmental agency staff in five states.

Turbidity level of treated water is one of the best indicators of the quality of water delivered to consumers. The greater percentage of time a utility produces lower turbidity water, the greater its protection of public health. In comparing 95^{th} percentile turbidity between year 2 and year 3, nine of the 17 plants improved, four maintained their already excellent records of achieving 0.1 nephelometric turbidity unit (NTU) 100% of the time, and four had turbidity performance declines. Looking strictly at population served, 98% of the population served by coagulation plants received water of the same or higher quality in year 3. For year 2 this statistic was 90%.

Now that optimization data has been collected for 3 years, long term performance trends for Idaho coagulation plants can be seen. On the cover of this annual report (and on page 15) is a long term trend graph for one Idaho water treatment plant. The shaded areas display the percent of time the plant met the optimization goal of having finished water turbidity $\leq$ 0.1 NTU, along with the percent of time their turbidity was $\leq$ 0.2 NTU and $\leq$ 0.3 NTU (read on the left axis). The blue line tracks the turbidity level (measured in NTUs) achieved at least 95% of the time (read on the right axis). This graph is one of the tangible illustrations of AWOP success.

The Area Wide Optimization Program continues to be well supported by DEQ staff and management. The need to involve more staff and more water plant operators has been recognized and positive steps are being made in that direction. There has been a 100% increase in exposure to AWOP training and concepts by Idaho DEQ drinking water staff. Continued alliance and cooperation with AWOP participants in other states, both in EPA Region 10 and nationwide, is necessary for the expansion and maturity of the program. These relationships greatly expand Idaho’s knowledge base and expertise in surface water treatment. Idaho’s participation in AWOP continues to reinforce public health protection as a foremost DEQ goal.

Contents

Area Wide Optimization Program History and Components

In this report, the national AWOP model promoted by the U.S. Environmental Protection Agency (EPA) is described, including its three components. The application of AWOP in Idaho is detailed in sections on goals, activities, and successes.

National Development of AWOP

Nationally, the Area Wide Optimization Program (AWOP) strategy targets higher risk public drinking water systems for state assistance to maximize public health protection. It was initiated as a pilot program in EPA Regions 4 and 6 in the 1990s and EPA Region 10 began promoting its use in December 2002.

The AWOP model consists of *three* components. The *status component* is the primary focus during the start-up year of an AWOP program. It includes defining the program, developing prioritization criteria, assessing the water treatment plants, and introducing the optimization concepts to water system operators.

Once the status component is established, the *targeted performance improvement (TPI) component* uses existing tools (e.g., sanitary surveys and optimization software) to first determine the factors limiting system performance and then help plant operators understand the changes needed to optimize performance. TPI implements applicable followup tools including Comprehensive Performance Evaluation (CPE), Performance Based Training (PBT), and Comprehensive Technical Assistance (CTA). These tools are all designed to help water plant operators gain a better understanding of water treatment plant procedures necessary to optimize their treatment.

The *maintenance component* integrates lessons learned back into the AWOP. It is designed to initiate and sustain quality control activities and integrate findings from AWOP activities into other related state programs.

The three components are in a perpetual state of evolution with each individual component impacting and strengthening the other two components. Reviewing any of the components allows for a continuous ability to assess plants' needs and identify priorities throughout the state.

Idaho AWOP

In the spring of 2003, Idaho initiated its own Area Wide Optimization Program when its proposal to use capacity development funds for surface water treatment plant optimization was approved by EPA. Previous annual reports contain information on the first and second years and this report provides details of the third year.

Idaho AWOP Goals

In Idaho, AWOP is currently focused on plants that treat surface water with coagulation and filtration, to help them optimize the performance of their existing plants. Performance and optimization are measured in many ways. Three of the most common measurements are explained below.

- **Turbidity –** Higher turbidity is closely associated with higher levels of particles present in water. Higher levels of particles are closely associated with microbial pathogens. Turbidity thus becomes an "indicator" of microbial pathogens. Turbidity is measured in nephelometric turbidity units (NTUs). Less turbid water gives a lower NTU reading. Optimization goals call not only for low NTU values but also that those low values be sustained over the vast majority of the time.
- **Combined filter effluent (CFE) turbidity –** Turbidity is measured as water leaves each filter to assess the relative performance of the individual filters. The CFE turbidity is measured again as the water combines after the filters. This is the measure of finished water turbidity as it leaves the water treatment plant.
- **"The 95th percentile" –** The 95th percentile refers to the turbidity level that is achieved 95% of the time. For AWOP purposes, this value is determined by taking the highest CFE turbidity reading each day and calculating which value reflects the 95% percentile. Because turbidity of the water entering the plant (raw water) can fluctuate widely, maintaining very low finished water turbidity 100% of the time is an extremely challenging goal (although some plants do achieve it). The turbidity level that is achieved 95% of the time is still a very good indicator of overall water quality and public health protection while providing a more realistic performance measure.

One of the primary goals in the Idaho AWOP is to maintain turbidity less than or equal to 0.1 NTU at least 95% of the time, which is often expressed as "95th percentile ≤ 0.1 NTU."

For plants that don't meet that goal, it is useful to note what percentage of the time they *do* meet the goal of ≤ 0.1 NTU, and what their average turbidity *is* 95% of the time, and to compare trends in these two measures over the long term.

Primary Idaho AWOP Activities in each of the three AWOP components are detailed in the following sections.

Status Component

The first year of the program was primarily devoted to the status component. The baseline year (year 1) activities can be reviewed in the First Annual Report released in April 2004.

Two additional plants committed to the Optimization Program in year 2. The details of year 2 activities can be reviewed in the Second Annual Report released in July 2005.

AWOP is a *voluntary* program. The combination of voluntary status and personnel turnover in water system operators and administrators presents a continuing challenge for training and motivation. Much of the status component in year 3 involved reiterating the AWOP concepts and encouraging participation in optimization activities.

CFE Turbidity Profiles

Success in year 3 is evident in that year's CFE turbidity profiles, which are presented in Table 1. This table documents changes in achievement of turbidity optimization goals from plant to plant and from year to year. In spite of some variability in participation, the overall program improved on both the measures shown in Table 1.

Overall, the plants matched their achievement in the previous year of averaging 0.14 NTU in the 95th percentile. The participating plants increased the amount of time they met the turbidity goal of $\leq$ 0.1 NTU, to 85.9% of the time in year 3 from 82.8% in year 2.

Table 1. CFE turbidity data for three years.

COMBINED FILTER EFFLUENT TURBIDITY DATA

Year 2 ^Ranking	Plant:	Baseline NTU 95th Percentile	Year 2 NTU 95th Percentile	Year 3 NTU 95th Percentile	Baseline %Values ≤0.1 NTU	Year 2 %Values ≤0.1 NTU	Year 3 %Values ≤0.1 NTU
1	Horseshoe Bend	0.05	0.04	0.04	100	100.0	100.0
2	Sandpoint Sand Creek	0.05	0.05	0.04	99.2	100.0	100.0
3	Riverside	0.23	0.07	0.05	66.2	100.0	100.0
4	McCall	0.08	0.06	0.05	98.4	97.8	100.0
5	Lewiston	0.09	0.07	0.06	98.3	98.6	100.0
6	Sandpoint Lake Plant	0.13	0.08	0.09	90.6	100.0	100.0
7	Priest River	0.30	0.09	0.07	3.8	98.4	98.6
8	United Water Marden WTP	0.14	0.09	0.09	89.8	97.4	98.1
9	Carlin Bay	0.05	0.09	0.08	98.9	98.7	97.8
10	Kamiah	0.16	0.11	0.10	86.5	94.3	95.6
11	Juliaetta	0.11	0.09	0.12	93.9	97.4	93.0
12	Elk City	0.30	0.06	0.16	56.8	100.0	89.1
13	Orofino	0.41	0.19	0.19	50.1	86.9	86.3
14	Bonners Ferry	0.32	0.50	0.50	77.5	57.4	70.9
15	Laclede	0.20	0.26	0.17	41.9	19.1	64.1
16	Pierce	0.28	0.25	0.25	54.4	47.5	50.1
17	Weiser	0.32	0.27	0.25	29.6	14.3	16.5
	AVERAGE	0.19	0.14	0.14	72.7	82.8	85.9

(Baseline Year = 7/02 - 6/03)
(Year 2 = 7/03 - 6/04)
(Year 3 = 7/04 - 6/05

^Sorted first by year 3 percentage at or below 0.1NTU and second by 95 percentile NTU value

Each plant's achievement of the turbidity optimization goal of 0.1 NTU compared for years 1, 2, and 3 is shown in Figure 1.

Figure 2 illustrates the 3-year trend in achievement of average turbidity 95% of the time, along with the average percent of time that turbidity level is achieved. In Figure 2 the red line shows a 3-year downward trend as average turbidity decreases. The blue line shows a three year upward trend as the percentage of measurements meeting the 0.1 NTU goal increases.

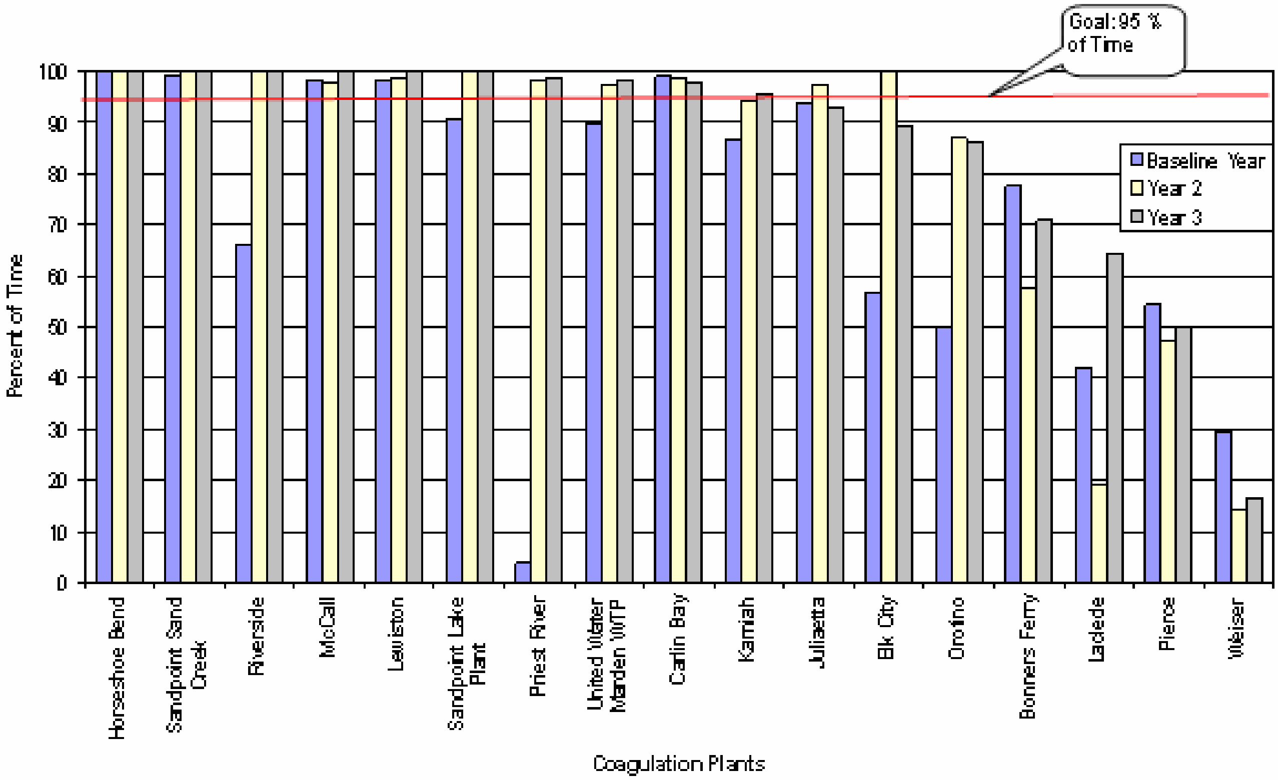


Figure 1. Comparison of Years 1, 2, and 3 Combined Filter Effluent turbidity by plant.

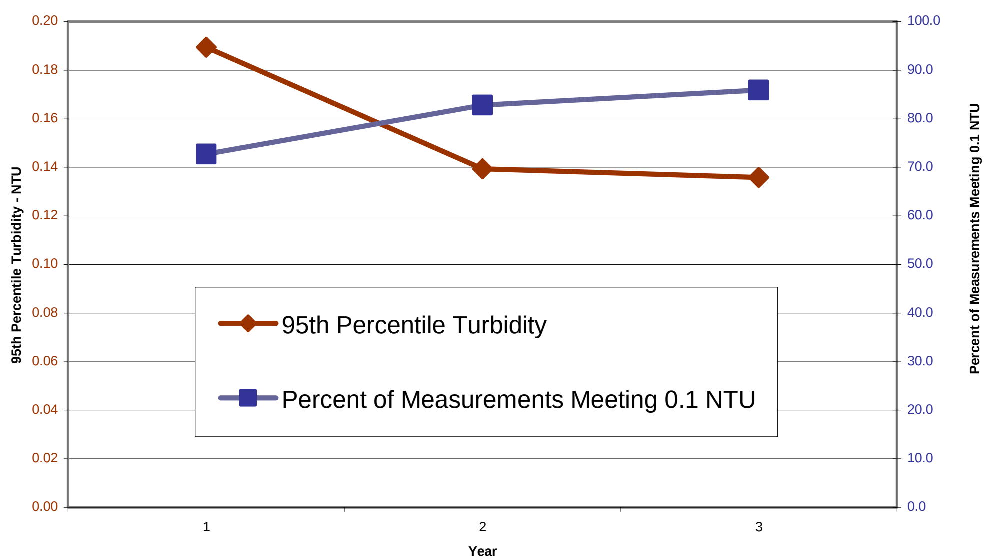


Figure 2. Trends in Combined Filter Effluent turbidity.

Plant Ranking

The prioritization criteria developed during the baseline year was used to score and rank all coagulation plants in the state. Please refer to Appendix A (Criteria Scoresheet) for the worksheet used in prioritization ranking. Appendix B is the overall ranking spreadsheet which adds the parameters of violations, operations, plant changes, and source water vulnerability to final turbidity results to assess the overall state ranking. It should be remembered that in overall ranking, the *lower* the number a plant achieves, the *higher* the level of public health risk for waterborne disease. Plants scoring low in overall ranking should translate to plants most adept at protecting public health.

Figure 3 shows that eleven plants had lower overall ranking points in year 3 versus year 2. The first three plants (Sandpoint, United, and Lewiston) in this chart have traditionally achieved a low number of ranking points. They continue to make improvements in their performance, which is vital as those three utilities combined serve 83% of the state's coagulated water users. Equally important to note in Figure 3 are the smaller plants such as Priest River and Laclede that show dramatic decline in overall ranking points from year 2 to year 3. Priest River decreased by 88 points and Laclede decreased by 102 points. Laclede's improvement was largely due to improvements in finished water turbidity achieved with skills developed in AWOP Performance Based Training.

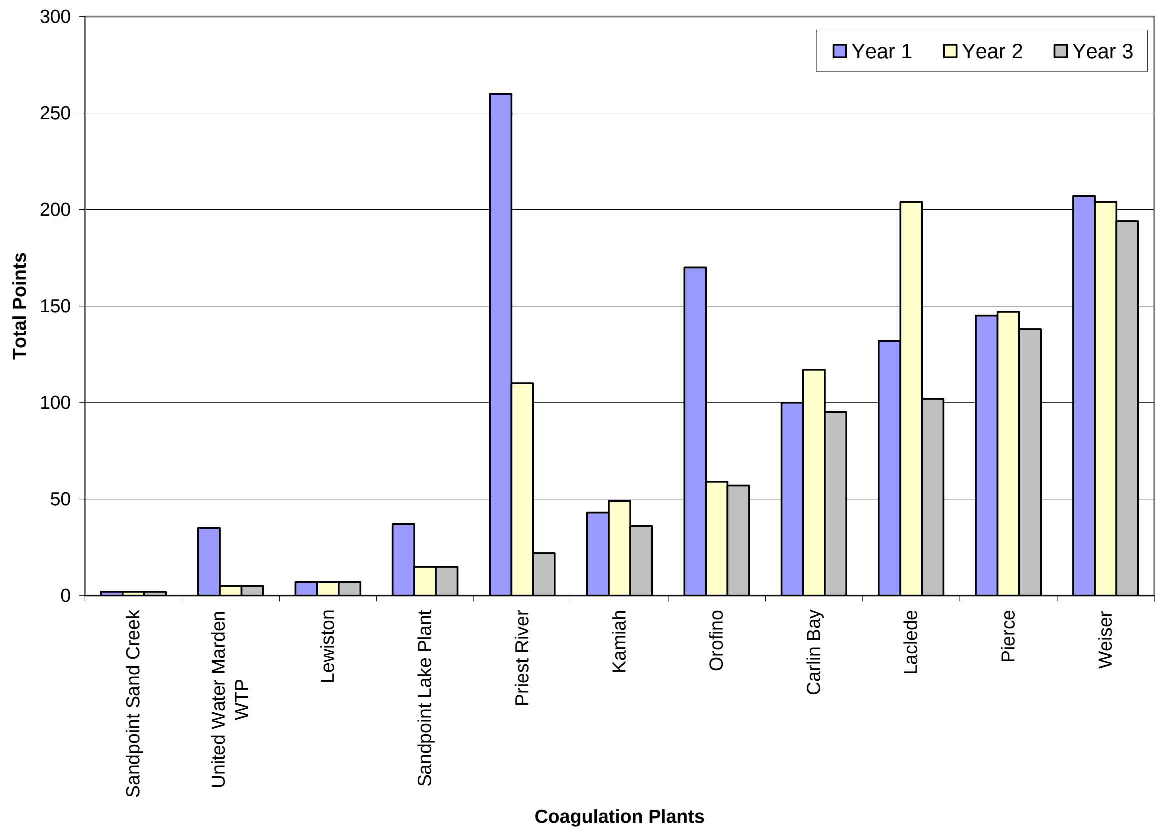


Figure 3. Eleven plants had lower overall ranking points in year 3.

Figure 4 shows the plants that increased their overall ranking points in year 3. The majority of these increases are due to an increase in monitoring violations. The violations in two of these plants appear to be a result of operator turnover. In several plants the violations are a result of the Long Term 1 Enhanced Surface Water Treatment Rule (LT1SWTR) that took effect in January 2005. Several plants were slow to grasp the need for additional monitoring, resulting in monitoring violations.

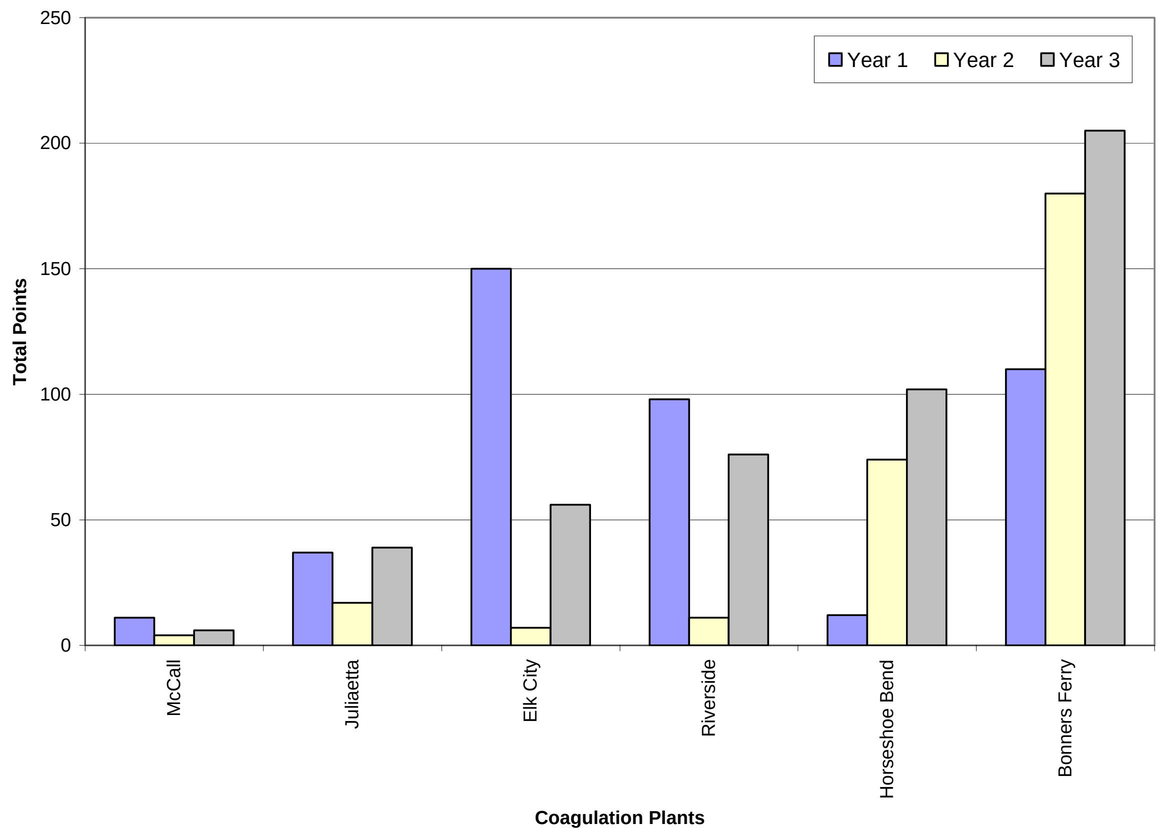


Figure 4. Six plants had increased overall ranking points in year 3.

A decrease in overall ranking points indicates an improvement in attaining optimization and thus an improvement in public health protection. In the baseline year, the total number of points assigned to **all** Idaho coagulation plants was 1,556. In year 2, that number had dropped by 22% to 1,212. In year 3 the number had dropped to 1,157, down 4.5% from the year 2 total of 1,212.

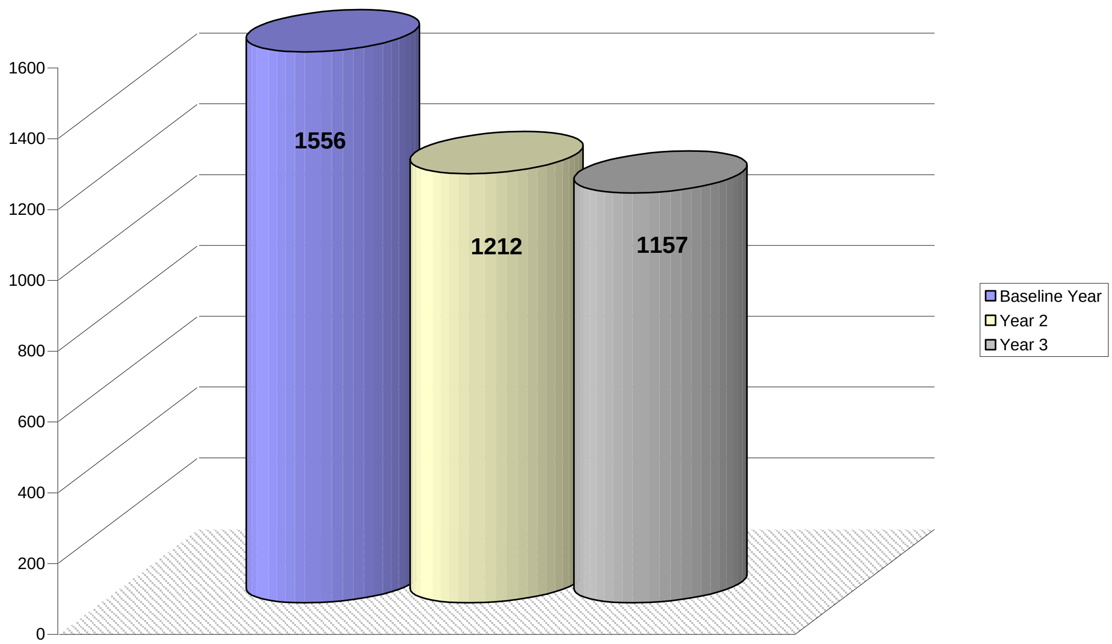


Figure 5. Three year comparison of total overall ranking points for all Idaho coagulation plants.

Targeted Performance Improvement Component

Idaho continues to develop tools for the targeted performance improvement (TPI) component of the AWOP model. These tools are utilized when the status component indicates a lack of progress towards optimization goals. The status component helps to prioritize decisions about where to apply technical assistance. The technical expertise of Department of Environmental Quality (DEQ) state drinking water staff is part of the TPI component and must be constantly upgraded to provide support to coagulation plants working to achieve the optimization goals. A significant number of staff hours were devoted to one plant in the form of a Comprehensive Performance Evaluation (CPE), which is detailed below. In addition to providing the necessary assistance for this water treatment plant to launch a variety of measures to improve the quality of water being served to their public, this on-site exercise served as a training tool for environmental agency staff in five states. In addition to the intense effort of the CPE, the greatest focus in this component in year 3 has been targeting specific water treatment plants with the continued training provided through Performance Based Training (PBT) (See page 11).

Comprehensive Performance Evaluation

The Comprehensive Performance Evaluation (CPE) continues to be a tool offered to and utilized by Idaho. A CPE consists of thorough review and analysis of a facility's design capabilities, along with analysis of their administrative, operational, and maintenance practices related to optimizing performance. A great opportunity came with being invited by the Alaska Department of Environmental Conservation to participate in a training CPE in Haines, Alaska, in October 2005. Participation in a CPE outside of Idaho provides an excellent opportunity to network with other environmental professionals and observe how other states address drinking water regulation. The Association of State Drinking Water Administrators (ASDWA) supported us by providing funding for one DEQ staff member to attend the 2005 Haines, Alaska CPE.

Idaho was given the opportunity to organize a multi-state training CPE, sponsored by the EPA Region 10 AWOP, in April 2006. Bonners Ferry agreed to host this CPE at their water system. Process Applications, Incorporated (PAI), a consulting firm working with the EPA Technical Support Center, provided quality control oversight to the CPE. AWOP staff from Oregon, Alaska, Washington, and Utah were invited to attend. A fourth segment (Disinfection Byproducts) was added to the CPE to address Bonners Ferry's escalating inability to meet both THM and HAA5 regulatory levels. The final team consisted of 18 environmental experts from five states, EPA and PAI.

Due to its excellence as a training tool, an attempt was made to open this CPE to as many Idaho DEQ staff members as possible. The final Idaho DEQ team included two engineers, three drinking water compliance staff members, the AWOP coordinator, and the State Drinking Water Manager.

Figure 6. Bonners Ferry CPE photographs left to right: Entrance meeting, Myrtle Creek intake, and plant pipe gallery.

The CPE training session started with a Monday evening coordination meeting. Tuesday morning the team held an entrance meeting with the Bonner's Ferry operators and city administrators to detail the plans for the week. A plant tour, data collection, interviews, special studies, and report writing occupied the following days. On Friday morning the week's findings were outlined in an exit meeting with the team and the Bonner's Ferry operators and administrators. Eleven "performance limiting factors" were outlined at this meeting. A final, detailed report was presented to the Bonner's Ferry mayor, city engineer, public works director, and plant operators in June.

Performance Based Training

Performance Based Training (PBT) was launched in Idaho in November 2004. This training brings together trainers, facilitators, and water plant operators and administrators, over a period of 12 months. Facilitator training, along with Sessions 1, 2, and 3, is detailed in the Second Annual Report released in July 2005. Sessions 4 and 5 were completed in September and December of 2005 and each is described below.

PBT Session 4 – Assessing Current Plant Performance and Applying Skills and Tools

Session 4 was hosted in Lewiston in September 2005 and operators from seven Idaho drinking water treatment plants attended. The objective of this session was to individually assess each participant's plant performance and identify potential special studies that could be used to enhance achievement of optimization goals. The morning consisted of verbal and written reports from operators on their homework assignments. In the afternoon, each plant was given the opportunity to present their latest nine months of optimization data to the group. Feedback was very animated as operators from other plants made "real life" suggestions for possible causes of changes in performance.

PBT Session 5 – Reporting on Success

Administrators from each water system were invited to the final PBT session in December 2005. This was the operators' opportunity to present their accomplishments to the mayors, city council members, and public works directors. Each operator gave a review of their homework assignments, special studies, and overall achievements for the year. Each water plant had completed a year's worth of optimization data and it was projected for all to see as the operator summarized the obstacles and successes the plant had experienced. From large to small systems, all water operators voiced a positive reaction to the year-long training.

Attendance to Session 5 was good, with four of the utilities sending at least one administrator. The smallest participating water system (Laclede) had three representatives from their Board of Directors. Certificates of Attendance were awarded to those six plants that successfully completed all five training sessions. Three of those six plants are highlighted below in Figure 7.

Figure 7. PBT Session 5 left to right: Lewiston operators summarizing their optimization data, Laclede operator with three Board of Directors members, and Bonners Ferry operators receiving their Certificates of Achievement. The Bonners Ferry operators traveled over 2,500 miles to attend all five sessions!

Participants' Feedback

After the final PBT session, operators said:

- "I liked the one year timeline, the homework assignments, the small group format, and the knowledgeable instructors. I also liked the interaction between all involved and having DEQ represented."
- "I liked the opportunity to meet and work with operators from other plants and to hear about their processes, procedures, problems, and solutions."

Facilitators' feedback after the final session included:

- "The operators did a great job. This (PBT) package could be applied to recalcitrant plants to demonstrate that even small plants can optimize."
- "There has been an interesting progression from initial skepticism to "let's have a Session 6 and make it two days."
- "The level of sharing of information was impressive. Operators were talking about how they were going to apply other special studies at their plants."

All remaining in this PBT package is a follow-up session scheduled for December 5, 2006.

Maintenance Component

The maintenance component is designed to be a proactive way of integrating with other state programs to cultivate sustainability of the Area Wide Optimization Program. The Idaho team attempts to review and revise the program to achieve this end. It has been recognized that AWOP has the ability to enhance surface water plants that treat in ways other than coagulation, such as slow sand filtration. In addition, there are AWOP concepts that can enhance the professionalism of both operators and DEQ compliance staff. These concepts are being integrated into training materials.

Some specific examples of Idaho AWOP maintenance activities conducted this year include:

- Draft status component parameters were developed for slow sand filter water systems. The goal is to expand AWOP activities to the 27 slow sand systems in Idaho.
- Drinking water compliance staff and the State Drinking Water Manager were invited to the Bonners Ferry CPE and received first hand experience with an AWOP tool. The goal was to expand AWOP "understanding" and "thinking" to other staff not involved in the program.
- Disinfection Byproduct performance was assessed for the Boners Ferry water system. The goal was to expand the staff skill level with performance goals and issues beyond turbidity.

Other Idaho AWOP Activities

Beyond the three main components of the AWOP strategy, the following activities were included in the AWOP program this year:

National AWOP meeting in Cincinnati

This was the first nation-wide AWOP meeting. Twenty-two states were represented at the conference with 17 states giving presentations on their programs. The Idaho AWOP coordinator was able to attend and report on the success of the program in Idaho. Emphasis varied from state to state – as did the innovative ways states have integrated AWOP into their drinking water programs. There was much to be learned from states that have been involved in AWOP for close to ten years.

Surface Water Treatment Workshop

In October 2005, DEQ/AWOP and the American Water Works Pacific Northwest Section (AWWA-PNWS) co-sponsored a surface water treatment workshop for water treatment operators. Included in this day-long forum were two presentations on different aspects of optimization in surface water plants.

Idaho AWOP Year 3 Successes

- **Achievement Awards** - In May 2006, Certificates of Achievement were presented to water treatment plants based on their optimization performance from July 2004 through June 2005. To receive this award, the plant had to start with achieving a finished water turbidity of 0.1 NTU or lower at least 95% of the time. In addition, they had to meet other stringent criteria related to public health protection. Included in this second set of criteria were source water vulnerability, plant violations, plant operations, and plant changes. The six plants that received this award in year 3 were:

    - City of Lewiston
    - City of McCall
    - City of Sandpoint (Lake Plant)
    - City of Sandpoint (Sand Creek Plant)
    - United Water – Marden Plant
    - City of Priest River

  Four of these plants (Lewiston, McCall, Sandpoint Lake and Sandpoint Sand Creek) achieved a turbidity of 0.1 NTU or lower **100%** of the time. This is truly an accomplishment of note.

- **Long Term Trends** - Three years' worth of optimization data provides the ability to see long term trends in the performance of Idaho coagulation plants. Figure 8 and Figure 9 are examples of AWOP successes in the long term. In each figure, the left axis displays the percent of the time the plant met the optimization goal of 0.1 NTU finished water turbidity and the right axis (blue line) tracks the 95th percentile NTU being achieved over the course of three years.

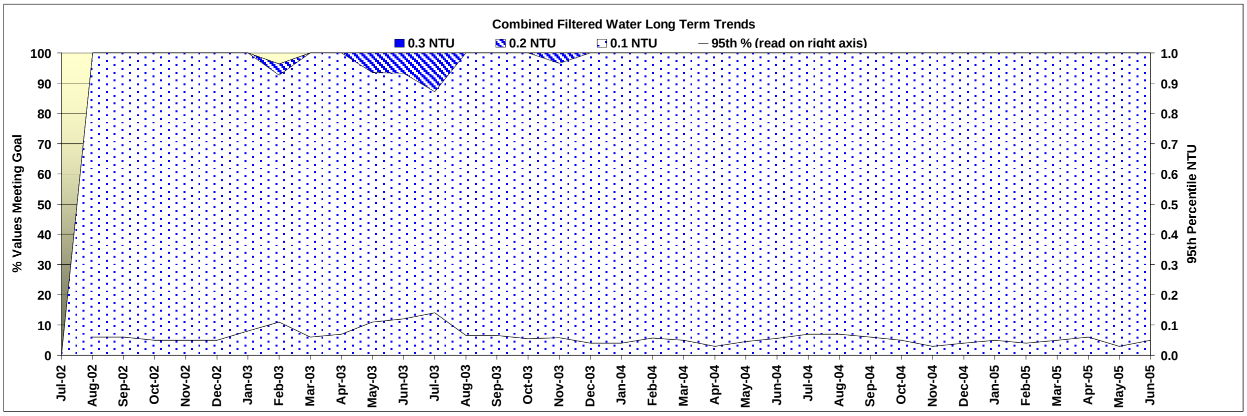


Figure 8. City of Lewiston shows a sustained history of only minor variations in finished water turbidity.

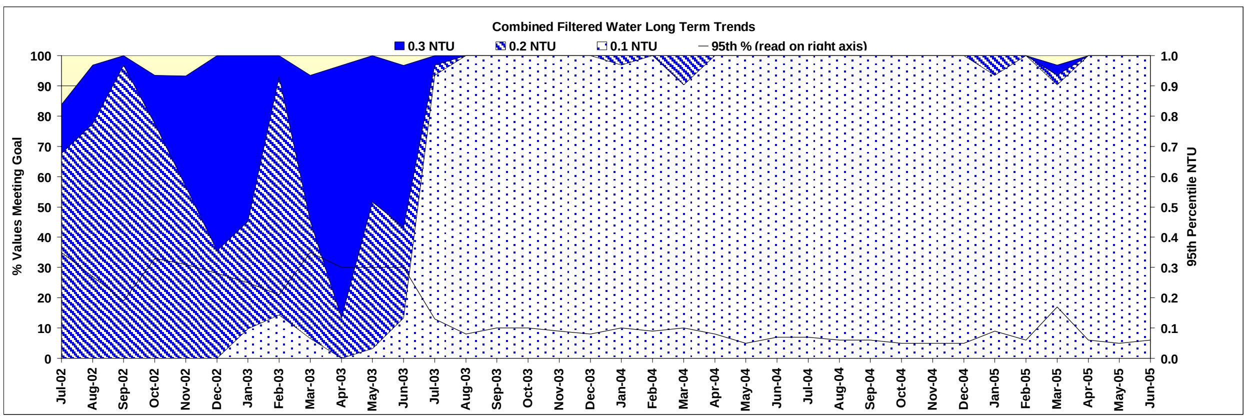


Figure 9. City of Priest River previously showed a history of significant fluctuation in their finished water turbidity followed by a downward trend toward the optimized goals as AWOP was introduced.

- **Population served** - The greatest indicator of a plant's attainment of optimization goals is an increase in the percent of time combined filter effluent is recording a turbidity of ≤ 0.1 NTU. As turbidity decreases, a higher quality of water is served to the public. In Idaho, 138,000 citizens are served by coagulation plants. In year 2, ninety percent (90%) of those citizens received water of lower turbidity (i.e., higher quality) water than in the baseline year. In year 3, ninety-eight percent (98%) of those same citizens received water of lower turbidity (i.e. high quality) than in year 2. The pie chart in Figure 10 below visually demonstrates the year 3 improvement by population.

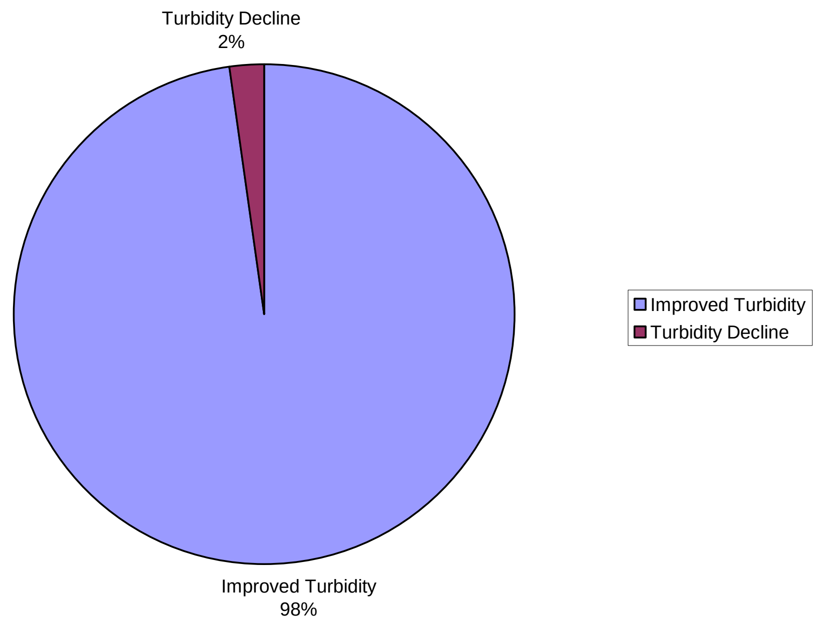


Figure 10. Turbidity change by population served (year 3 versus year 2).

Appendix A
Criteria Scoresheet

Idaho AWOP Criteria Scoresheet
Year 3 (July 2004 - June 2005)

Date Completed:
Plant Name& ID:
Population Served:
Population Served by Coagulation:
SDWIS says….

1. Percent of Time CFE Turbidity is < 0.1 NTU

Evaluation	Score
95-100	0
90-94.99	10
85-89.99	20
80-84.99	30
75-79…	40
70-74…	50
60-69…	70
50-59…	90
40-49..	100
30-39..	120
20-29..	140
10-19..	160
0-9…	180

2. 95th Percentile CFE Turbidity

Evaluation	Score
< 0.1 NTU	0
0.11 to 0.15 NTU	10
0.16 to 0.2 NTU	15
0.21 to 0.25 NTU	20
0.26 to 0.30 NTU	30
>0.3 NTU	50

3. Settled Water Turbidity Recorded

Evaluation	Score
Yes or Not Applicable	0
No	5

4. Individual Filter Turbidimeters

Evaluation	Score
Yes	0
No	10

5. Filter to Waste

Evaluation	Score
In use	0
Not available/not used	10

6. Hours of Operation

Evaluation	Score
24 hr. per day	0
Shutdown overnight	5
Intermittent with frequent on/off	10

7. Operator on Duty/Alarm Systems

Evaluation	Score
Yes	0
No but alarms page operator	2
No but alarms shut down plant	5
No and alarms disabled/inoperable	15

8. Major Change at Plant in Last Year

Evaluation	Score
No	0
Yes	5

9. Operator Actively Optimizing

Evaluation	Score
Yes	0
No	10

10. Source Water Vulnerability

Evaluation	Score
Low	0
Moderate	3
High	5

11. Violations (CT Ratio, TTHM, HAA5, Bromate, TOC/Alkalinity)

Evaluation	Score
None	0
TT	5
MCL	5
Monitoring	2
Reporting	2

12. 5 or more Stage 1 and/or LT1 TT, MCL, M/R Violations

Evaluation	Score
No	0
Yes	50

Appendix B
Overall Ranking

July 2004 – June 2005

Plant Information

PWSNO	1110003	3440011	2180027	1090073	4080024	1280039	2180032	2180024	2250017	2290018	2310003	1090107	1090121	2350014	4430033	4010016	1090121
Plant Name	**City of Bonners Ferry**	**Weiser**	**Pierce**	**Laclede**	**Horseshoe Bend**	**Carlin Bay**	**Riverside Independent Water Dist**	**Orofino**	**Elk City**	**Juliaetta**	**City of Kamiah**	**City of Priest River**	**Sandpoint Lake Plant***	**Lewiston**	**McCall**	**United (Marden)**	**Sand Creek Plant**
Population(served by coagulation treatment)	4000	5343	618	598	760	90	2000	1609	350	840	1307	2300		16500	4000	90000	8000
Total Population Served by Coagulation: 138,117																	
Last Sanitary Survey	3/16/2006	4/30/2004	3/5/2003	4/10/2006	6/30/2004	6/28/2004	7/7/2004	6/17/2003	4/8/2003	7/11/2002	4/10/2002	3/21/2006	12/16/2003	10/28/2002	5/30/2004	4/30/2004	12/16/2003
Percent of Coagulation Population	2.9%	3.9%	0.4%	0.4%	0.5%	0.1%	1.4%	1.2%	0.6%	0.6%	0.9%	1.7%	*	11.9%	2.9%	65.1%	5.8%
Criteria	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**	**Score**
Percent of Time CFE Turbidity <= 0.1 NTU	50	160	90	70	0	0	0	20	10	10	0	0	0	0	0	0	0
95th Percentile CFE Turbidity (NTU)	50	20	20	15	0	0	0	15	15	10	0	0	0	0	0	0	0
Settled Water Turbidity Recorded	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Individual Filter Turbidimeters	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Filter to Waste	10	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0
Hours of Operation	10	5	10	5	10	5	5	7	5	10	10	10	10	2	0	0	0
Operator on Duty/Alarm Systems	5	2	5	5	2	0	0	5	2	2	7	5	0	0	2	2	2
Major Change at Plant in Last Year	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operator Actively Optimizing	2	2	5	2	2	2	2	5	10	2	2	2	0	0	0	0	0
Source Water Vulnerability	3	5	0	5	0	5	3	5	0	5	3	5	5	5	2	3	0
Violations:																	
CT Ratio	25	0	2	0	20	33	4	0	7	0		0	0	0	2	0	0
TTHM	0	0	2	0	2	0	2	0	0	0	4	0	0	0	0	0	0
HAA5	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0
Bromate	0	0	0	0	2	0	0	0	0	0		0	0	0	0	0	0
Turbidity/TOC/Alkalinity	0	0	4	0	14	0	10	0	7	0		0	0	0	0	0	0
> 5 CT, TT, MCL , M/R violations in year	50	0	0	0	50	50	50	0	0	0	0	0	0	0	0	0	0
Total Score	**205**	**194**	**138**	**102**	**102**	**95**	**76**	**57**	**56**	**39**	**36**	**22**	**15**	**7**	**6**	**5**	**2**

Total of all scores 1157

*Sandpoint Lake Plant serves the SAME 8,000 population as the Sand Creek Plant.